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BEFORE THE

Federal Communications Commission

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

Amendment of the Commission's Rules to Establish New Personal Communication Services	)	GEN Docket No. 90-314 ET Docket No. 92-100
Request of PacTel Paging for a Pioneer's Preference Respecting Advanced Architecture Paging Service	)	PP-38

To: The Commission

Petition for Reconsideration of
Tentative Decision Denying Preference Request

PACTEL PAGING

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SUMMARY

PacTel Paging ("PacTel") is asking the Commission to reconsider the tentative decision to deny a pioneer's preference to PacTel for its Advanced Architecture Paging ("AAP") service.

Since July of 1991, PacTel has pursued an intensive research and development program that has resulted in significant advancements in messaging technology. Utilizing advanced techniques, PacTel has increased the basic baud rate that can be used in a simulcast messaging system utilizing 25 kHz channel spacing from 3000 baud -- previously considered to be the practical limit -- to 4800 baud. When this transmission speed is coupled with advanced coding schemes and modulation techniques that increase the bits of information transmitted in each interval, the effective information delivery rate of AAP approaches 38.4 to 57.6 kilobits per second using 50 kHz of bandwidth.

PacTel's AAP proposal meets the standard for a preference. Like MTel who received a preference, PacTel has demonstrated that it is directly responsible for one or more significant innovations necessary to establish a new or enhanced messaging service.

The denial of the AAP preference request is based upon incorrect premises. The fact that PacTel is continuing to experiment should not cause the Commission to overlook the significant advances that have already been made. Also, the finding that PacTel's bit delivery rates do not meet or exceed those of MTel is mistaken.

In sum, granting the requested preference is necessary to advance the policy objectives embodied in the preference procedures.

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PacTel Paging ("PacTel"), by its attorneys, hereby respectfully petitions the Commission to reconsider[1/] the tentative decision announced in the Notice of Proposed Rulemaking and Tentative Decision, FCC 92-333, released August 14, 1992 (the "Tentative Decision") to deny PacTel's request for a pioneer's preference (PP-38) filed in ET Docket No. 92-100 with respect to

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1/ It is unclear from the Commission's rules whether requests for the Commission to change tentative decisions regarding pioneer's preferences are timely if filed as comments in the proceeding (in this case the comment date is November 9, 1992), or must be submitted as petitions for reconsideration within 30 days pursuant to Sections 1.106 or 1.429. Out of an abundance of caution, PacTel is filing within the statutory reconsideration period.

its proposed Advanced Architecture Paging ("AAP") service[2/]. The following is respectfully shown:

I. Statement of Operative Facts

1. PacTel is one of the leading providers of paging services in the country. The company operates extensive common carrier and private carrier radio paging systems in 16 states which serve in excess of 700,000 units. PacTel provides a broad array of paging services including tone, voice, digital display and alpha-numeric services.

2. Historically, innovation in the paging industry has been driven by the manufacturers of paging equipment. Market leaders in the communications equipment manufacturing field, who could recoup research and development costs through revenues from equipment sales, would develop and promote to carriers new paging products that represented advancements in the state of the art. However, as PacTel and others[3/] emerged as leaders in the provision of paging services, they began to take an increasing

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[2/] PacTel also submitted a request for a pioneer's preference respecting its proposed Ground Air Paging Service ("GAP"). See PP-39. The Commission tentatively concluded that this request should be denied because it was based upon a new service concept and not a new technology. See Tentative Decision, para. 159. PacTel is not seeking reconsideration of this portion of the Tentative Decision at this time, but would like to reserve the right to do so later if in the course of this proceeding the Commission adopts a more expansive view of the applicable standard and awards preference to others who are proposing new services rather than new technologies.

[3/] For example, Mtel, a leading provider of nationwide paging services, has an active research and development program that led to the Commission's tentative decision to award a pioneer's preference in PP-37 for its multi-carrier modulation ("MCM") techniques.

services[4]. For example, the preference requests filed in ET Docket No. 92-100 include submissions by a broad cross-section of carriers who have undertaken experimentation to develop advanced messaging services.[5]

3. The shift of the locus of technical innovation from the manufacturers to the paging carriers has brought the creative process closer to the end users. Now, the service provider -- who is interfacing on a day-to-day basis with the actual subscriber -- is driving the innovation rather than the manufacturers who dealt principally with the carriers. The ability of the paging industry to respond promptly and efficiently to the demands of the marketplace is enhanced by the increasing participation in product development of the paging carriers who are in direct contact with the ultimate consumers of the products and services.

4. The development by PacTel of the AAP service provides a prime example of the innovative process at work. Based upon the intimate familiarity of the company with the users of paging products and services, PacTel was able to discern three

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[4] The Commission's pioneer's preference procedures have played a major role in fostering this positive development. Carriers can only recoup their investment in research and development for new services if they ultimately receive licenses that enable them to provide and charge for the innovative service. The licensing preference to pioneers increases the prospects for a carrier who is an innovator to receive a license, and thus encourages the commitment of resources to experimentation. In contrast, a manufacturer who is an innovator does not have a stake in any one license, but can recoup its investment from the equipment used by any and all ultimate licensees.

[5] See e.g., preference requests of PageMart (PP-40), Paging Network, Inc. (PP-84), Dial Page L.P. (PP-35) and Metriplex, Inc. (PP-81).

significant trends in the demand for messaging services. First, users of such services are demanding that more information be delivered to them. Traditional paging service has evolved from tone-only (where a tone alert advised a subscriber to call the office) to multi-tone (where distinct tones advised the user to call distinct locations) to numeric display (where any 10 digit telephone number could be transmitted to the subscriber for call back) to alpha numeric (where brief text messages could be sent). In each stage of this evolution, the catalyst for innovation has been the requirement of the marketplace for the delivery of more information. PacTel envisions that this trend will continue and accelerate.

5. Second, subscribers require services which cover an ever-expanding geographical area. What began as essentially a local service (e.g. the ability to page a doctor when he or she was off duty at home) became a city-wide, then a metropolitan area, then a statewide, then a multi-state and, in some instances, a nationwide service, as the mobility of subscribers increased over time. For example, in order to meet existing demands, PacTel now operates an integrated regional paging system that provides service throughout the western states and extends from the Canadian border to the Mexican border and is developing regional multi-state systems in other areas. There also is continued expansion in the industry of nationwide systems and services. These developments are spurred by evolving wide-area needs in the marketplace.

6. Third, customers are demanding a low cost[6/] communications alternative. Some industry analysts predicted that the demand for paging services would soften or decline when the allocation of cellular spectrum enabled ubiquitous seamless mobile communication services to be offered to a large number of potential subscribers. In actuality, the growth in paging services has accelerated dramatically during the same period in which cellular services have enjoyed explosive growth. As a result, PacTel has concluded that the mobile market has many tiers. In this mobile information age, nearly everyone has the need for channels of communication which enable the user to receive information promptly and efficiently while in transit. The differences come in the willingness and ability to pay. There has proven to be a large vibrant market for both high end cellular services and entry level messaging services provided that the latter can be delivered at a low (e.g. less than $10 per month) price.

7. Based upon the foregoing considerations, PacTel perceives one significant segment of the market for the next generation of messaging services to require the delivery of large amounts of information (e.g. large data files, text files, E-mail, facsimile, digitized voice, graphics, etc.) over vast geographic areas at a low cost. This perception caused PacTel to undertake an extensive research and experimentation program designed to advance the state of the art in messaging technology

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6/ Also, there will continue to be increasing demand for more traditional messaging services (numeric display, alpha-numeric, etc.).

to meet these ascertained needs. In doing so, PacTel first drew upon its previous experience in the industry to focus its developmental effort:

(a) The demand for both low cost and wide-area coverage caused PacTel to limit its initial experimentation to one-way services. One-way services can be effected utilizing high-powered base station transmitters[7] that are capable of serving a relatively large area.[8] In contrast, two-way services, which require a return link infrastructure able to accommodate low-powered mobile units, are much more capital intensive. This fact, coupled with the strong market demand for one-way services witnessed by PacTel, directed PacTel's experimental efforts toward technologies that are exclusively one-way.[9]

(b) The need for wide-area coverage also caused PacTel to focus upon simulcast technology as the mechanism for providing

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[7] Under existing rules, paging stations in the 931 MHz band operate with ERPs ranging from 125 to 3500, depending upon the height above average terrain. See FCC Rules, Section 22.502(c). Similar power limits have been proposed for narrowband PCS operations. See Tentative Decision, para. 125, Table 2.

[8] As envisioned by PacTel, one-way services are those involving only base to mobile transmission without any corresponding transmissions by the mobile. Simplex operations would be considered two-way.

[9] PacTel understands that other proponents of narrowband services are advocating messaging services that have an acknowledgement, talk-back, radiolocation or two-way component. See, e.g., Pagemart, PP-40 (Personal Information Messaging Service"); PageNet, PP-84 (digitized voice with acknowledgement); Dial Page, PP-35 (acknowledgement paging). PacTel has not and does not oppose these proposals. PacTel has suggested that these messaging services should not be intermixed with one-way services out of concern that the high powered base transmissions will potentially interfere with the low-powered return link systems that two-way service require.

the advanced services. Simulcasting has served the paging industry well as a method for providing reliable coverage over extended areas so that a subscriber can receive a signal regardless of where he or she may be. Improvements in techniques for synchronizing transmitters and the increased sensitivity and selectivity of receivers have enhanced the benefits of simulcasting.[10/]

(c) The key determinant in developing a commercially viable service is to increase the speed of transmission. As subscribers demanded more information, each would consume more capacity of the channel. Consequently, fewer subscribers would be able to be served and the costs of supporting the system infrastructure would have to be borne by this smaller universe of users. This trend could be offset by increasing the speed of transmission, thereby enabling more users to be served over a single channel, and putting downward pressure on the price of the service.[11/]

8. These considerations played a major part in the formulation of the experimentation plan for AAP. On July 29, 1991,[12/] a date which precedes by a substantial margin other

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[10/] In fact, PacTel has spearheaded improvements in the synchronizing of transmitters. See discussion infra at para. 11.

[11/] The relationship between speed of transmission and cost is so critical that PacTel focused its initial testing on achieving a fundamental breakthrough in the speed of systems.

[12/] Arguably, only those who initiated experimental programs by July 30, 1991 were eligible for a preference in this proceeding. In adopting its preference procedures, the Commission accorded those who would seek a preference in an ongoing proceeding to submit either an experimental license application or rulemaking request before July 30, 1991. See Preference Order, 6 FCC Rcd

(continued...)

experimental programs for advanced messaging services ("AMS")[13], PacTel's parent, Pacific Telesis Group ("Telesis"), notified the Commission that PacTel intended to begin testing an advanced technology platform called "Advanced Architecture Paging" as part of the broad based PCS experimentation program that Telesis had been authorized to undertake.[14] The AAP experimental program contemplated the development of a high speed unformatted digital data stream which would provide the platform for a whole host of enhanced messaging services including enhanced character sets, low and high resolution graphics, E-mail, facsimile, digitized voice and lengthy alpha numeric messages. See "Notice of Details of Experimental Program", filed July 29, 1991 (copy included as Attachment 1). The experimental program that was outlined indicated PacTel's intention to seek to test the reliability and efficiency of providing services of this nature at higher transmission speeds in a simulcast environment. See Attachment 1 at Section IV.A. PacTel also indicated its intention to test the relationship between bandwidth and transmission speeds in an

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[12](...continued)
3720 (1991). At this time, RM-7617 was underway respecting advanced messaging services, and the PCS proceeding was in progress.

[13] For example, MTel submitted its Request for a Pioneer's Preference (PP-37) on November 12, 1991, at which point it was just embarking upon its program of research and development. PageMart secured the developmental license which formed the basis of its Personal Information Messaging service in September of 1991. the fact that PacTel was actively pursuing its AAP experimentation in July of 1991 confirms that pioneering nature of PacTel's work.

[14] On February 20, 1991, the Commission granted Telesis authority to conduct a variety of experimental propagation and system tests in multiple frequency bands. See FCC File Nos. 1658 through 1662-EX-PL-90.

effort to determine the most spectrally efficient combination.[15] Id. at Section IV.C. In addition, PacTel indicated that it would study coding schemes which can effect the amount of information delivered in a particular time frame. Id. at Section IV.D.

9. On August 2, 1991, PacTel filed its formal "Request For Pioneer's Preference" respecting AAP service.[16] This request indicated that PacTel sought a preference both because the service concept of offering an unformatted digital data stream to one-way subscribers was unique and the prospects for increased transmission speeds represented technological advancement. See Preference Request, para 6.

10. In November of 1991, Telesis requested a Special Temporary Authority ("STA") and sought to amend its experimental license application to enable PacTel to increase the power of its experimental AAP station from 10 watts to 300 watts in order to test the effect of transmissions at higher baud rates in the simulcast environment.[17] An AAP test plan accompanied this

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[15] Due to receiver selectivity and reception capabilities, a wider bandwidth could support a higher paging transmission speed. Thus, the relationship between bandwidth and transmission speeds needed to be explored.

[16] The timing of this request was dictated, in part, by uncertainty over whether the Commission would treat AAP as a form of Advanced Messaging Service within the scope of a previously filed rulemaking request by Telocator. See RM-7617. PacTel was concerned that its eligibility for a preference could be adversely affected if the Telocator petition led to a Notice of Proposed Rulemaking before PacTel's AAP experiments were completed. Consequently, PacTel was forced to file in the early stages of its developmental program.

[17] The increase in power was requested because of concerns that tests at the previously authorized power of 10 watts would not be predictive of results at the higher power levels at which paging stations operate.

request. See Attachment 2. Again, the test plan emphasized the efforts being undertaken by PacTel to utilize creative techniques to increase the transmission speed that could be utilized reliably in a simulcast environment. Id. at Section 1.0.

11. The requested STA was granted in December of 1991 and field tests began early the next year. An extensive technical progress report, filed with the Commission in April of 1992, reported the results at that time. See Attachment 3. A key focus of the tests was a determination of the effect of higher transmission speeds on the bit error rate ("BER"). As expected, the results showed that more raw bit errors occurred at higher baud rates. However, by using the Global Positioning System ("GPS") to synchronize simulcast transmitters within one microsecond, PacTel was able to successfully test data rates of 2400 and 3200 baud with no significant degradation of the BER. See Attachment 3 at Section 8.0. This experimental report indicated PacTel's intention to continue to investigate the effect of data rate on BER. And, the report noted PacTel's intention to experiment with different coding schemes and modulation schemes in order to determine the number of bits of information that could be delivered at these rates.

12. The details of PacTel's ongoing AAP experimentation were further outlined to the Commission in presentations made May 27, 1992. Copies of the written materials provided to the Commission at this time are included as Attachment 4. At this point, based upon the continuing experiments, PacTel had begun to believe that the upper limit on the baud rate could be extended from the 3200 baud rate that had

been tested, to 4800 baud. Thus, as the written materials provided to the Commission on that date represent: "The simulcast environment provides a fundamental limitation on the over-the-air data rate - 3.2 kb/s, possibly 4.8 kb/s" Id. at unnumbered page 16. The materials go on to indicate that the feasibility of this higher rate was "to be tested". Id. In addition, the presentation sets forth in detail the testing of multi-level modulation schemes that was underway to determine the extent to which the effective data rate could be increased through the use of multi-frequency FSK, multi-level FSK, 16 QAM and narrowband CDMA techniques. Id.

13. By June of 1992, PacTel had confirmed that a 4800 baud simulcast rate was feasible. This fact is reflected in the AAP "Modulation Test Plan" filed with the Commission on June 16, 1992. See Reply Comments of PacTel Paging in ET Docket No 92-100 at Exhibit 1 (copy attached as Attachment 5). This test plan summarized the results of the PacTel's AAP Phase 1 experimentation as follows:

> The maximum baud rate achievable when one information bit is transmitted during the time of one signalling bit is 4800 baud.

See Attachment 5 at page 1. This conclusion is confirmed in the Second Experimental Report, a copy of which is included as Attachment 6. This report shows test results indicating that 4800 baud can be used in a simulcast environment provided that systems are engineered to synchronize transmitters within 1 microsecond.

14. The Phase 2 test plan filed in June of 1992 went on to describe in detail the manner in which the rate at which bits of information are delivered is a function of not just the baud rate, but the modulation scheme which may enable more bits of information to be transmitted during each transmission interval:

> For example, if a data stream containing binary data, where a bit period equals one information bit, is 1200, then the baud rate is 1200 baud and the bit rate is 1200 bps. If, however, the signalling bit period is kept the same but now two bits are transmitted in the same interval of the signalling bit period, the baud rate is still 1200 baud, but the bit rate is 2400 bps.

See Attachment 5 at p. 4-5. PacTel's June filing indicated that an effective throughput rate of 9600 bps could be achieved in a 25 kHz channel with a 4800 baud rate and the use of four level frequency shift keying ("FSK").[18/] Further improvements in this effective rate were expected using orthogonal frequency division multiplexing ("OFDM"), and PacTel indicated its intention to continue the experimentation in order to test the feasibility of increasing the 4800 baud bit delivery rate by a factor of 4 to 19.2 kilobits per second using 16QAM and by a factor of 6 to 28.8 kilobits per second using 64QAM modulation schemes.

15. On July 16, 1992, the Commission adopted its Tentative Decision. In this decision, the Commission tentatively concluded that PacTel's request for a Pioneer's preference for

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[18/] This equates to 19,200 bps with a 50 kHz bandwidth. By comparison, MTel in June of 1992 was indicating that "a data rate of 15,000 bps is demonstrably achievable" in a 50 kHz channel. See MTel Technical Feasibility Demonstration at p. 9.

AAP should be denied. The dramatic results of PacTel's year long program of AAP experimentation were dismissed in two sentences:

> PacTel's experimental report indicates that it is testing bit rates for simulcast systems, but testing and results have not concluded. There is no evidence that PacTel has developed a methodology that equals or exceeds the information transmission capacity developed by Mtel [which the Commission considered to be greater than 20,000 bits per second[19]].

Tentative Decision, para. 162.

16. As is set forth in detail below, the Commission erred in failing to accord PacTel a pioneer's preference for the significant advancements it has made in the effective rates of information delivery. Coupling these advancements with PacTel's service concept -- a high speed digital data stream which customers can format to their own needs -- will result in customers enjoying new service functionalities. Thus, like Mtel[20], PacTel is deserving of a licensing preference which is

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[19] Mtel has accepted 3,000 baud as "a practical limitation on simulcast operations". Mtel "Technical Feasibility Demonstration" filed June 1, 1992 at p. 7. Mtel is in the midst of a validation program to achieve an effective data delivery rate of 24,000 bps by utilizing orthogonal spacing to subdivide a 50 kHz channel into 8 carriers with 3 kbps and multi-tone on-off keying ("MOOK"). Mtel has indicated, however, that it has not yet modelled such a scheme "and cannot comment on its performance". Id. at p 8-9 and note 22. Interestingly, PacTel was at the same time independently exploring orthogonal operating techniques to adhere to its system requirements.

[20] PacTel does not oppose the grant of the pioneer's preference to Mtel. Mtel and PacTel have pursued parallel but independent programs of research and development each of which have resulted in advances in the state of the art in the delivery of information. Each has resulted in a separate service concept. Pactel's is a one-way service; Mtel's is a two-way service.
(continued...)

necessary for the company to have a reasonable opportunity to participate in the provision of the new services and technologies that it took a lead in developing.[21/]

II. PacTel Has Met the Preference Standards

17. The Tentative Decision provides a succinct summary of the pioneer's preference criteria derived from the applicable rules[22/], proceedings[23/], and case precedents[24/]. Applying these standards to PacTel, a preference grant is warranted:

(a) **Responsibility for One or More Significant Innovations** - As noted by the Commission, "[t]he rationale for granting a pioneer's preference is that the requester is responsible for one or more significant innovations that relate to communications technology and service..." Tentative Decision, para. 146. Here, while others are accepting a practical limit on

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[20/](...continued)
There is no justification in law or policy for considering their preference requests to be mutually exclusive. In fact, multiple preferences can be awarded to parties who propose similar services if each has made a significant independent contribution.

[21/] PacTel is very concerned that its prospects for securing a narrowband license in the absence of a preference are remote. Assuming that the Commission lacks auction authority, and is unwilling to conduct comparative hearings, PacTel will find itself vying against insincere applicants and speculators who have been prevalent in lottery licensing proceedings despite the Commission's best efforts to weed them out.

[22/] See 47 C.F.R. Sec. 1.402, 1.403 and 5.207.

[23/] See Establishment of Procedures to Provide a Preference, 6 FCC Rcd 3488 (1991); recon. granted in part, 7 FCC Rcd 1808 (1992), further recon. pending.

[24/] See Tentative Decision for Low-Earth Orbit Satellites, 7 FCC Rcd 1625 (1992)(granting preference request of Volunteers in Technical Assistance).

the baud rates that can be utilized in a simulcast environment of 3000 baud, PacTel has tested and demonstrated the feasibility of 4800 baud. This represents a 60% increase in speed. And the impact of this improvement on information delivery rates is compounded when the higher underlying transmission speed is coupled with improved modulation techniques to deliver more bits of information in each interval. The baud rate is one of the basic building blocks upon which increases in data delivery rates are constructed. Thus, PacTel's proposal constitutes a "significant communications proposal" and PacTel is the "party responsible for the claimed innovation". Id.

(b) **Investment of Significant Effort** - The Commission expects a preference candidate to have "invested significant effort in developing the innovation and pursuing authorization of its implementation." Id. PacTel has an experimental program of longstanding that has produced a significant body of technical research that has been reported to the Commission. PacTel also has diligently pursued its rulemaking request for the allocation of spectrum to accommodate AAP. Thus, this important criterion is met.

(c) **Establishment of a New or Enhanced Service** - In acting upon preference requests, the Commission considers "whether the innovation reasonably will lead to the establishment of a service not currently provided or substantially enhance an existing service". Id., para. 147. This determination is made by evaluating factors that include added functionality, new use of spectrum, changed operating or technical characteristics, increased spectrum efficiency, increased speed or quality of

information transfer, technical feasibility and reduced cost. Virtually all of these factors weigh in PacTel's favor on AAP. The unformatted character of the AAP digital data stream provides added functionalities and offers new uses of spectrum because it will enable users to tailor the transmissions they receive to their own needs and thus receive information in forms not previously available to recipients of one-way over the air transmissions. And, Pactel has demonstrated the technical feasibility of increasing the baud rate and effective data delivery rates which necessarily result in changed operating characteristics, increased speed, improved spectrum efficiency and reduced cost.

(d) **Rules Reflecting the Preference Proposal** - The Commission also requires that a preference only be granted if the rules that are adopted are a reasonable outgrowth of the proposal and lend themselves to the grant of a preference. Id., para 149. Here, the proposed rules for the 930-931 MHz narrowband allocation clearly satisfy this requirement. PacTel was a major advocate of making this strategically placed band[25/] available for one-way uses operating with power limits similar to those governing common carrier paging operations in the 931-932 MHz band. Pactel also advocated a licensing scheme that would enable a carrier to receive a grant on a common frequency throughout a large geographic area -- either nationwide or regional -- so that wide area service could be provided. Finally, PacTel proposed

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[25/] This 1 MHz block was placed in reserve for Advanced Paging uses because of its ideal location between existing private carrier and common carrier paging allocations at 929-930 MHz and 931-932 MHz respectively.

flexible technical standards that would enable systems to evolve over time to implement technical innovations and to provide a variety of services. All of these core proposals find support in the proposed rules. The 930-931 MHz band has been earmarked for unpaired use ideal for one-way communications. Tentative Decision, para. 50. The Commission has proposed power and antenna heights derived from existing rules regulating paging services. Id., para 125. The Commission also has tentatively concluded that "large regional or national service areas would provide for flexibility in the design and implementation of [narrowband] systems" Id., para 62.[26/] Finally, the Commission has adopted only minimum technical standards thereby according narrowband licensees maximum flexibility. Clearly, these proposed rules must be considered to be a reasonable outgrowth of the PacTel rulemaking request, and certainly will accommodate a preference grant to PacTel.

18. On balance, the Commission must conclude that PacTel has met the applicable preference standard. The overriding policy objective of the Commission in adopting its preference procedures was to reward innovators who endeavor to undertake the effort and risk associated with the development of significant technological advancements. PacTel has made important contributions to the next generation of messaging

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[26/] The Commission identified four options for service area sizes, but solicited comment on others. In the absence of a nationwide allocation, PacTel supports a regional plan that would divide the nation into five or fewer areas which roughly correspond to the large regional paging systems that exist today in the marketplace. The rationale for this alternative to the smaller regions mentioned by the Commission will be fully developed in PacTel's forthcoming comments on the proposed rules.

services through its dedication to research and development. This is precisely the type of effort that the preference procedures were designed to reward.

III. The Denial of the PacTel Request Is Based Upon Incorrect Premises

19. The PacTel pioneer's preference request is denied in part because "testing and results have not been concluded." Tentative Decision, para. 162. This stated rationale fails on several counts. First, and foremost, PacTel's experimentation has already achieved a significant technological advance (i.e. the demonstration of the technical feasibility of 4800 baud simulcast systems).[27] The fact that PacTel is continuing to experiment cannot be allowed to overshadow the progress that has been made to date.

20. Second, the Commission's own pronouncements clearly contemplate that experimentation is expected to continue throughout the rulemaking process so that final preference awards are based upon a complete record at the time that final rules are established. Thus, a preference applicant relying upon an experimental program need only report "preliminary findings to the Commission that tend to confirm the technical feasibility of its proposal". Preference Order on Reconsideration, 7 FCC Rcd 1880 at para 49 (1992). It is error in light of this standard for

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[27] As earlier noted, the baud rate is the basic building block to which modulation and coding schemes can be added to compound the improvement in effective data delivery rates. Any simulcast system, such as AAP or MTel's Nationwide Wireless Network ("NWN") will experience an improvement in throughput when the basic underlying transmission speed increases.

the Commission to penalize PacTel for the ongoing nature of its program.[28/]

21. Third, and finally, the status of the preference applicant's experimentation at the time of the NPRM should not be a decisive factor in light of the unpredictability of the timing of the preference decision. The timing of the decisionmaking on the PacTel AAP request provides a case in point. It was not at all clear to persons outside of the agency that the 930-931 MHz band would be included in the PCS proceeding until relatively late in the process. Indeed many, including PacTel, were advocating that Advanced Messaging Services ("AMS") would better be dealt with in a separate proceeding. Had AMS not been included as a form of narrowband PCS, the timing of the preference decision would have been changed[29/] as would the status of PacTel's experimentation.

22. The status of PacTel's experimentation would also have differed if the Commission had voluntarily deferred action on the narrowband PCS preference applicants in ET Docket No. 92-

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[28/] PacTel notes that Mtel, who received a preference, also has not completed its program of experimentation. In fact, Mtel's ability to transmit 24 kilobits per second in a single 50 kHz channel -- the key determinant in the preference award -- is a subject of continuing validation. See discussion at note 19, supra. In Mtel's case, the Commission properly recognized that applicants can receive credit for ongoing experimental efforts as long as progress is being made.

[29/] The Tentative Decision was no doubt accelerated by the aggressive timetable the Commission adopted for moving forward on PCS. PacTel remains concerned that final determinations on AMS will ultimately be delayed by the inclusion of 930-931 MHz in the larger PCS docket because of the complexity of some of the issues which must be resolved in the above 2 GHz band (e.g. spectrum clearing, spectrum sharing, etc.).

100 as it has done in other contexts.[30/] For example, in the Low-Earth Orbit Satellite proceeding, the Commission elected not to make initial preference determinations when it adopted its Notice of Proposed Rulemaking in order to accord itself more time to review the proposals. See Tentative Decision (ET Docket No. 91-280), FCC 92-21, released February 11, 1992. Even in this PCS proceeding, the Commission chose to defer action on the 57 pending requests for preferences in GEN Docket No. 90-314 -- **six of which propose narrowband uses that could be provided in the 900 MHz spectrum range** -- in order to give itself more time. Given the amount of discretion the Commission has to decide when a preference decision will be made, the timing is, from the applicant's view, almost a matter of happenstance. Under these circumstances, the fact that an experimental program has not yet been completed should not be considered decisionally significant by the Commission.

23. The best course for the Commission to take in making preference determinations involving ongoing programs of experimentation is to evaluate the goal the applicant is seeking to achieve, the progress made to date, and the commitment of the applicant to continue. If the Commission determines that the ultimate objective, if achieved, is significant, that the progress to date tends to show that the outcome is technically

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[30/] If ever there was an instance justifying additional time, it was with respect to the narrowband PCS preferences. The deadline for filing preference requests didn't come until June 1, 1992, and comment/reply dates ran until June 28, 1992. See Public Notice, DA 92-712, released June 4, 1992. Thus, the extensive record regarding the preference filings was scarcely closed when the Tentative Decision was adopted.

feasible, and that the commitment of the applicant is sufficient to hold promise of success, then a preference should be tentatively awarded. If, in the course of the rulemaking proceeding, the desired results are not achieved, or the continuing contribution of the applicant fades, then the tentative award will not ripen into a full blown preference. Notably, this approach will encourage innovators to continue their experimentation during the rulemaking process, rather than stifling their efforts.[31/]

24. The Commission also erred in concluding that "[t]here is no evidence that PacTel has developed a methodology that equals or exceeds the information transmission capacity developed by Mtel." Tentative Decision, para. 162. In making this statement, the Commission fails to compare apples to apples. As earlier described, a proper analysis of the effective rate of data delivery requires consideration of the several factors including the underlying baud rate, the manner in which the spectrum is subdivided and the modulation and interleaving techniques that are used to increase the number of bits of information that can be delivered in each interval. Mtel's belief that it can achieve in excess of 20,000 bits per second is based upon a baseline assumption that "individual subscribers can

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[31/] The Tentative Decision notes the beneficial effect that the pioneer's preference rules have had on sparking the development of a wide variety of personal communication services. Ironically, the decision of the Commission to deny all but one of the narrowband preference requests will have just the opposite effect. Better for the Commission to encourage at this stage those who are on a potentially productive track, rather than prematurely denying those who have not yet completed their programs.